3/)



OIPE

RAW SEQUENCE LISTING

DATE: 03/12/2002

PATENT APPLICATION: US/09/966,803

09/966,803 TIME: 09:44:20

Input Set : N:\Crf3\RULE60\09966803.raw
Output Set: N:\CRF3\03122002\I966803.raw

SEQUENCE LISTING

1 (1) GENERAL INFORMATION:

```
(i) APPLICANT: Murphy et al.
      3
            (ii) TITLE OF INVENTION: Amidases
           (iii) NUMBER OF SEQUENCES: 4
            (iv) CORRESPONDENCE ADDRESS:
                  (A) ADDRESSEE: CARELLA, BYRNE, BAIN, GILFILLAN,
      7
                                  CECCHI, STEWART & OLSTEIN
                  (B) STREET: 6 BECKER FARM ROAD
      8
      9
                  (C) CITY: ROSELAND
     10
                  (D) STATE: NEW JERSEY
                                                             ENTERED
     11
                  (E) COUNTRY: USA
     12
                  (F) ZIP: 07068
     13
             (V) COMPUTER READABLE FORM:
                  (A) MEDIUM TYPE: 3.5 INCH DISKETTE
     15
                  (B) COMPUTER: IBM PS/2
     16
                  (C) OPERATING SYSTEM: MS-DOS
     17
                  (D) SOFTWARE: WORD PERFECT 5.1
     18
            (vi) CURRENT APPLICATION DATA:
C--> 19
                  (A) APPLICATION NUMBER: US/09/966,803
C--> 20
                  (B) FILING DATE: 27-Sep-2001
     21
                  (C) CLASSIFICATION:
     22
           (vii) PRIOR APPLICATION DATA:
     23
                  (A) APPLICATION NUMBER: US/09/609,570
     24
                  (B) FILING DATE: 30-Jun-2000
                  (A) APPLICATION NUMBER: 09/427,372
     25
     26
                  (B) FILING DATE:
     27
          (viii) ATTORNEY/AGENT INFORMATION:
     28
                  (A) NAME: Charles J. Herron
     29
                  (B) REGISTRATION NUMBER: 28,019
     30
                  (C) REFERENCE/DOCKET NUMBER: 331400-53
     31
            (ix) TELECOMMUNICATION INFORMATION:
     32
                  (A) TELEPHONE: 201-994-1700
     33
                  (B) TELEFAX: 201-994-1744
     34 (2) INFORMATION FOR SEQ ID NO: 1:
             (i) SEQUENCE CHARACTERISTICS:
                  (A) LENGTH: 1869 NUCLEOTIDES
     36
     37
                  (B) TYPE: NUCLEIC ACID
     38
                  (C) STRANDEDNESS: SINGLE
     39
                  (D) TOPOLOGY: LINEAR
W--> 40
            (ii) MOLECULE TYPE: DNA
     41
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:
     42
             ATG ACC GGC ATC GAA TGG AAC CAC GAG ACC TTT TCT AAG TTC GCC TAC 48
```

Input Set : N:\Crf3\RULE60\09966803.raw
Output Set: N:\CRF3\03122002\I966803.raw

| W> | 43 44 | Met | Thr | Tly | Ile | Glu 5 | Trp | Asn | His | Glu | Thr 10 | Phe | Ser | Lys | Phe | Ala 15 | Tyr | |
|----|-----------------|------|-------|----------|------|----------|------|------|------|------|-----------|------|-----|------|------|------------------|-------------|--------------------|
| | 45 | CTG | GGC | GAC | CCG | AGG | АТА | CGG | GGA | AAC | | ATC | GCG | TAC | ACC | CTG | ACG | 96 |
| | 46 | | | | Pro | | | | | | | | | | | | | |
| | 47 | | - | • | 20 | _ | | | - | 25 | | | | - | 30 | | | |
| | 48 | AAG | GCC | AAC | ATG | AAG | GAC | AAC | AAG | TAC | GAG | AGC | ACG | GTT | GTT | GTT | GAA | 144 |
| | 49 | | | | Met | | | | | | | | | | | | | |
| | 50 | _ | | 35 | | _ | _ | | 40 | _ | | | | 45 | | | | |
| | 51 | GAC | CTT | GAA | ACG | GGC | TCA | AGG | CGC | TTC | ATC | GAG | AAC | GCC | TCA | ATG | CCG | 192 |
| | 52 | Asp | Leu | Glu | Thr | Gly | Ser | Arg | Arg | Phe | Ile | Glu | Asn | Ala | Ser | Met | ${\tt Pro}$ | |
| | 53 | | 50 | | | | | 55 | | | | | 60 | | | | | |
| | 54 | | | | CCA | | | | | | | | | | | | | |
| | 55 | Arg | Ile | Ser | Pro | Asp | Gly | Arg | Lys | Leu | Ala | Phe | Thr | Cys | Phe | Asn | Glu- | • |
| | 56 | 65 | | | | | 70 | | | | | 75 | | | | | 80 | |
| | 57 | | | | GAG | | | | | | | | | | | | | 288 |
| | 58 | Glu | Lys | Lys | Glu | | Glu | Ile | Trp | Val | | Asp | Ile | Gln | Thr | | Ser | |
| | 59 | | | | | 85 | | | | | 90 | | | | | 95 | | |
| | 60 | | | | GTC | | | | | | | | | | | | | 336 |
| | 61 | Ala | Lys | Lys | Val | Leu | Ser | Thr | Lys | | Val | Arg | Ser | Met | | Trp | Asn | |
| | 62 | | | | 100 | | | | | 105 | | | | | 110 | ~~~ | ~~= | 204 |
| | 63 | | | | AGG | | | | | | | | | | | | | 384 |
| | 64 | Asp | Asp | | Arg | Arg | Leu | Leu | | vaı | GTÄ | Pne | ràs | | Arg | Asp | Asp | |
| | 65 | a. a | a. a | 115 | ama. | mmm | | 030 | 120 | ama. | 000 | ama. | maá | 125 | CAC | 7 7 M | 3 00 0 | 422 |
| | 66 | | | | GTC | | | | | | | | | | | | | 432 |
| | 67 | GIU | 130 | Pne | Val | Pne | ASP | 135 | ASP | vaı | PIO | Val | 140 | Pile | ASP | ASII | мес | |
| | 68 69 | CCA | | un un un | GAT | CCA | CAC | | እርር | N CC | መመረ | TCC | | Cmm | CAC | λCT | CAC | 180 |
| | 70 | | | | Asp | | | | | | | | | | | | | 400 |
| | 71 | 145 | rne | riic | изр | GLY | 150 | цуз | 1111 | 1111 | The | 155 | vul | Leu | пор | 1111 | 160 | |
| | 72 | | GAG | GAG | ATA | АТС | | CAG | TTC | GAG | AAG | | AGG | ጥጥጥ | TCG | AGT | | 528 |
| | 73 | | | | Ile | | | | | | | | | | | | | 020 |
| | 74 | | 014 | 014 | | 165 | 010 | 0211 | | 0 | 170 | | 5 | | | 175 | 1 | |
| | 75 | CTC | TGG | CAC | GGC | | GĊG | ATA | GTT | GTG | AAC | GTC | CCG | CAC | CGC | GAG | GGG | 576 |
| | 76 | | | | Gly | | | | | | | | | | | | | |
| | 77 | | • | | 180 | - | | | | 185 | | | | | 190 | | _ | |
| | 78 | AGC | AAG | CCT | GCC | CTG | TTC | AAG | TTC | TAC | GAC | ATA | GTC | CTA | TGG | AAG | GAC | 624 |
| | 79 | Ser | Lys | Pro | Ala | Leu | Phe | Lys | Phe | Tyr | Asp | Ile | Val | Leu | Trp | Lys | Asp | |
| | 80 | | | 195 | | | | | 200 | | | | | 205 | | | | |
| | 81 | GGG | GAG | GAA | GAG | AAG | CTC | TTC | GAG | AGG | GTC | TCC | TTC | GAG | GCG | GTT | GAC | 672 |
| | 82 | Gly | Glu | Glu | Glu | Lys | Leu | Phe | Glu | Arg | Val | Ser | Phe | Glu | Ala | Val | Asp | |
| | 83 | | 210 | | | | | 215 | | | | | 220 | | | | | |
| | 84 | | | | AAG | | | | | | | | | | | | | 720 |
| | 85 | | Asp | Gly | Lys | Arg | | Leu | Leu | Arg | Gly | | Lys | Lys | Lys | Arg | | |
| | 86 | 225 | | | | | 230 | | | | | 235 | | | | | 240 | n c o |
| | 87 | | | | CAC | | | | | | | | | | | | | 768 |
| | | Ile | Ser | G1u | Hls | - | Trp | Leu | туг | Leu | | Asp | GLY | GLu | Leu | | Pro | |
| | 89 | 3.55 | m » ~ | ~ ~ ~ | 000 | 245 | a= ~ | a. ~ | ama | maa | 250 | 000 | | OE 2 | 3.00 | 255 | 003 | 016 |
| | 90 | | | | GGC | | | | | | | | | | | | | ΩΤ <i>ρ</i> |
| | 91 | тте | ıyı | GIU | Gly | PLO | ьeu | ASP | val | ırp | GIU | нта | гĀ2 | ьeu | TIL | GIU | стА | |

Input Set : N:\Crf3\RULE60\09966803.raw
Output Set: N:\CRF3\03122002\I966803.raw

| 92 | | | | 260 | | | | | 265 | | | | | 270 | | | |
|------------|-------|-------|--------|-----|-------|-----|--------|-------|----------|-------|--------|--------|-------|----------------|-----|----------------|------|
| 93 | AAG (| GTC | TAC | TTC | CTC | ACT | CCA | GAT | GCG | GGC | AGG | GTA | AAC | CTC | TGG | CTC | 864 |
| 94 | Lys \ | /al | Tyr | Phe | Leu | Thr | Pro | Asp | Ala | Gly | Arg | Val | Asn | Leu | Trp | Leu | |
| 95 | | | 275 | | | | | 280 | | | | | 285 | | | | |
| 96 | TGG (| GAC | GGG | AAG | GCC | GAG | CGT | GTT | GTT | ACC | GGC | GAC | CAC | TGG | ATT | TAC | 912 |
| 97 | Trp A | Asp | Gly | Lys | Ala | Glu | Arg | Val | Val | Thr | Gly | Asp | His | \mathtt{Trp} | Ile | \mathtt{Tyr} | |
| 98 | | 290 | | | | | 295 | | | | | 300 | | | | | |
| 99 | GGG (| | | | | | | | | | | | | | | | |
| 100 | Gly | Leu | Asp | Val | Ser | - | _ | Lys | Ala | Leu | | | Ile | Met | Thr | | |
| 101 | 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| 102 | | | | | | | | | | | | | | | | | 1008 |
| 103 | Thr | Arg | Ile | Gly | | | Tyr | Leu | туг | _ | _ | Glu | Leu | Lys | | | |
| 104 | | | _ | | 325 | | | | | 330 | | _ | | _ | 335 | | |
| 105 | | | | | | | | | | | | | | | | | 1056 |
| 106 | Thr | Glu | Tyr | | _ | Pro | Ile | Phe | _ | _ | Leu | Lys | Thr | Phe | | Pro |) |
| 107 | | | | 340 | | | | | 345 | | | | | 350 | | | |
| 108 | | | | | | | | | | | | | | | | | 1104 |
| 109 | Arg | Hls | | Arg | Phe | Lys | Ser | _ | _ |) Leu | ı G.Lu | тте | | Gly | Trp | Tyr | |
| 110 | | | 355 | | | | , a | 360 | | | | | 365 | | | | 1150 |
| 111 | | | | | | | | | | | | | | | | | 1152 |
| 112 | Leu | _ | | GIU | vaı | ьys | | | ггаг | Ala | PIC | | | . Val | Pne | val | |
| 113 | a a a | 370 | | aaa | 330 | 000 | 375 | | | GA C | | 380 | | п ж С | CAC | 3 m <i>c</i> | 1200 |
| 114 | | | | | | | | | | | | | | | | | 1200 |
| 115 | 385 | СТУ | СТУ | PIO | гуѕ | 390 | | . Tyl | СТУ | HIS | 395 | | · val | Tyr | GIU | 400 | |
| 116 117 | | CITIC | N TO C | CCC | N.C.C | | | י תאר | ' TO A C | י שככ | | | CTTC | አአሮ | CCC | | 1248 |
| 117 | | | | | | | | | | | | | | Asn | | | |
| 119 | GIII | ьеu | Mec | на | 405 | цуз | Gry | тут | тут | 410 | | . FIIC | val | ASII | 415 | | |
| 120 | GGC | AGC | GAC | GGC | | AGC | GAA | GAC | ' ጥጥር | | | י רכר | GTC | СТС | | | 1296 |
| 121 | | | | | | | | | | | | | | Leu | | | |
| 122 | OI, | DCI | p | 420 | _ | 001 | OLU | | 425 | | | | , | 430 | | | |
| 123 | ACT | GGC | ТTG | | | ттт | GAG | GAC | | | AAC | GGC | ATC | | | TTC | 1344 |
| 124 | | | | | | | | | | | | | | Glu | | | |
| 125 | | 1 | 435 | | | | | 440 | | | | _ | 445 | | | | |
| 126 | TTC | AAG | CTC | GAA | CCG | CAG | GCC | GAC | AGG | GAG | CGC | GTT | GGA | ATA | ACG | GGC | 1392 |
| 127 | | | | | | | | | | | | | | Ile | | | |
| 128 | | 450 | | | | | 455 | _ | | | - | 460 | _ | | | _ | |
| 129 | ATA | AGC | TAC | GGC | GGC | TTC | ATG | ACC | AAC | TGG | GCC | TTG | ACT | CAG | AGC | GAC | 1440 |
| 130 | Ile | Ser | Tyr | Gly | Gly | Phe | Met | Thr | Asn | Trp | Ala | Leu | Thr | Gln | Ser | Asp | |
| 131 | 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| 132 | CTC | TTC | AAG | GCA | GGA | ATA | AGC | GAG | AAC | GGC | ATA | AGC | TAC | TGG | CTC | ACC | 1488 |
| 133 | Leu | Phe | Lys | Ala | Gly | Ile | Ser | Glu | Asn | Gly | Ile | Ser | Tyr | Trp | Leu | Thr | |
| 134 | | | | | 485 | | | | | 490 | | | | | 495 | | |
| 135 | | | | | | | | | | | | | | | | | 1536 |
| 136 | Ser | Tyr | Ala | | Ser | Asp | Ile | Gly | | _ | Tyr | Asp | Val | Glu | Val | Ile | |
| 137 | | | | 500 | | | | | 505 | | | | | 510 | | | |
| 138 | | | | | | | | | | | | | | | | | 1584 |
| 139 | Gly | Pro | | Pro | Leu | Glu | Asn | | | Phe | Arg | Lys | | Ser | Pro | Leu | |
| 140 | | | 515 | | | | | 520 | | | | | 525 | | | | |

Input Set : N:\Crf3\RULE60\09966803.raw
Output Set: N:\CRF3\03122002\1966803.raw

| | | | | | | • | | | | | | | | | | | | |
|--|-----|--|--|---|--|---|---|---|--|--|--|--|--|--|---|---|--|------|
| 141 | | | | | | | | | | | | | | | | | | 1632 |
| 142 | | Phe | Tyr | Ala | Gln | Asn | Val | | Ala | Pro | Ile | Leu | Leu | Ile | His | Ser | Leu | |
| 143 | | | 530 | | | | | 535 | | | | | 540 | | | | | |
| 144 | | GAG | GAC | TAC | CGC | TGT | CCG | CTC | GAC | CAG | AGC | CTT | ATG | TTC | TAC | AAC | GTG | 1680 |
| 145 | | Glu | Asp | Tyr | Arg | Cys | Pro | Leu | Asp | Gln | Ser | Leu | Met | Phe | Tyr | Asn | Val | |
| 146 | | 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| 147 | | CTC | AAG | GAC | ATG | GGC | AAG | GAA | GCC | TAC | ATA | GCG | ATA | TTC | AAG | CGC | GGC | 1728 |
| 148 | | Leu | Lys | Asp | Met | Gly | Lys | Glu | Ala | Tyr | Ile | Ala | Ile | Phe | Lys | Arg | Gly | |
| 149 | | | | | | 565 | | | | | 570 | | | | | 575 | | |
| 150 | | GCC | CAC | GGC | CAC | AGC | GTC | CGC | GGA | AGC | CCG | AGG | CAC | AGG | CCG | AAG | CGC | 1776 |
| 151 | | Ala | His | Gly | His | Ser | Val | Arg | Gly | Ser | Pro | Arg | His | Arg | Pro | Lys | Arg | |
| 152 | | | | | ·580 | | | | | 585 | | | | | 590 | | | |
| 153 | | TAC | AGG | CTC | TTC | ATA | GAG | TTC | TTC | GAG | CGC | AAG | CTC | AAG | AAG | TAC | GAG | 1824 |
| 154 | | \mathtt{Tyr} | Arg | Leu | Phe | Ile | Glu | Phe | Phe | Glu | Arg | Lys | Leu | Lys | Lys | Tyr | Glu | |
| 155 | | | | 595 | | | | | 600 | | | | | 605 | | | | |
| 156 | | GAG | GGC | TTT | GAG | GTA | GAG | AAG | ATA | CTC | AAG | GGG | AAT | GGG | AAC | TGA | | 1869 |
| 157 | | Glu | Gly | Phe | Glu | Val | Glu | Lys | Ile | Leu | Lys | Gly | Asn | Gly | Asn | | | |
| 158 | | | 610 | | | | | 615 | | | | | 620 | | | | | |
| 160 | (2) | INFO | RMAT | ION I | FOR S | SEQ . | ID NO |): 2 | : | | | | | | | | | |
| 161 | | (i) | SEQ | JENC | E CHA | ARAC: | reris | STICS | 3: | | | | | | | | | |
| 162 | | | (A |) LEI | NGTH | : 623 | 2 AM | INO A | ACIDS | 3 | | | | | | | | |
| 163 | | | (B |) TYI | PE: 2 | AMINO | AC: | ID | | | | | | | | | | |
| 164 | | | (C |) STI | RANDI | EDNES | 3S: | | | | | | | | | | | |
| 165 | | | (D |) TO | POLO | GY:] | LINEA | λR | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| 166 | | (ii) | MOL | ECULI | | | | | | | | | | | | | | |
| 166 167 | | (ii) (xi) | | | E TYI | PE: I | PROTI | EIN | EQ II | ON C | : 2: | • | | | | | | |
| | | (xi) | SEQ | JENCI | E TYI | PE: I | PROTI PTION | EIN N: SI | | | : 2: Thr | Phe | Ser | Lys | Phe | Ala | Tyr | |
| 167 | | (xi) | SEQ | JENCI | E TYI | PE: I | PROTI PTION | EIN N: SI | | | | Phe | Ser | Lys | Phe | Ala 15 | Tyr | |
| 167 168 | | (xi) Met | SEQI Thr | JENCI Gly | E TYI E DES Ile | PE: 1 SCRII Glu 5 | PROTI PTIOI Trp | EIN N: SI Asn | His | Glu | Thr | | | _ | | 15 | _ | |
| 167 168 169 | | (xi) Met | SEQI Thr | JENCI Gly | E TYI E DES Ile | PE: 1 SCRII Glu 5 | PROTI PTIOI Trp | EIN N: SI Asn | His | Glu | Thr 10 | | | _ | | 15 | _ | |
| 167 168 169 170 | | (xi) Met Leu | SEQUE Thr | JENCI Gly Asp | E TYI E DES Ile Pro 20 | PE: I SCRII Glu 5 Arg | PROTI PTION Trp Ile | EIN N: SI Asn Arg | His Gly | Glu Asn 25 | Thr 10 | Ile | Ala | Tyr | Thr 30 | 15 Leu | Thr | |
| 167 168 169 170 171 | | (xi) Met Leu | SEQUE Thr | JENCI Gly Asp | E TYI E DES Ile Pro 20 | PE: I SCRII Glu 5 Arg | PROTI PTION Trp Ile | EIN N: SI Asn Arg | His Gly | Glu Asn 25 | Thr 10 Leu | Ile | Ala | Tyr | Thr 30 | 15 Leu | Thr | |
| 167 168 169 170 171 172 | | (xi) Met Leu Lys | SEQUENT Thr Gly Ala | JENCI Gly Asp Asn 35 | E TYIE DES Ile Pro 20 Met | PE: I SCRII Glu 5 Arg Lys | PROTI PTION Trp Ile Asp | EIN N: SI Asn Arg Asn | His Gly Lys 40 | Glu Asn 25 Tyr | Thr 10 Leu | Ile Ser | Ala Thr | Tyr Val 45 | Thr 30 Val | 15 Leu Val | Thr | |
| 167 168 169 170 171 172 173 | | (xi) Met Leu Lys | SEQUENT Thr Gly Ala | JENCI Gly Asp Asn 35 | E TYIE DES Ile Pro 20 Met | PE: I SCRII Glu 5 Arg Lys | PROTI PTION Trp Ile Asp | EIN N: SI Asn Arg Asn | His Gly Lys 40 | Glu Asn 25 Tyr | Thr 10 Leu Glu | Ile Ser | Ala Thr | Tyr Val 45 | Thr 30 Val | 15 Leu Val | Thr | |
| 167 168 169 170 171 172 173 174 | | (xi) Met Leu Lys Asp | SEQUENTHY Gly Ala Leu 50 | JENCI Gly Asp Asn 35 Glu | E TYIE DESTINATION TO THE | PE: I SCRII Glu 5 Arg Lys Gly | PROTI PTION Trp Ile Asp | EIN N: SI Asn Arg Asn Arg | His Gly Lys 40 Arg | Glu Asn 25 Tyr Phe | Thr 10 Leu Glu | Ile Ser Glu | Ala Thr Asn 60 | Tyr Val 45 Ala | Thr 30 Val Ser | 15 Leu Val Met | Thr Glu Pro | |
| 167 168 169 170 171 172 173 174 | | (xi) Met Leu Lys Asp | SEQUENTHY Gly Ala Leu 50 | JENCI Gly Asp Asn 35 Glu | E TYIE DESTINATION TO THE | PE: I SCRII Glu 5 Arg Lys Gly | PROTI PTION Trp Ile Asp | EIN N: SI Asn Arg Asn Arg | His Gly Lys 40 Arg | Glu Asn 25 Tyr Phe | Thr 10 Leu Glu Ile | Ile Ser Glu | Ala Thr Asn 60 | Tyr Val 45 Ala | Thr 30 Val Ser | 15 Leu Val Met | Thr Glu Pro | |
| 167 168 169 170 171 172 173 174 175 | | (xi) Met Leu Lys Asp Arg 65, | SEQUENTHY Gly Ala Leu 50 Ile | JENCI Gly Asp Asn 35 Glu Ser | E TYIE DESTILE Pro 20 Met Thr | PE: I SCRII Glu 5 Arg Lys Gly | PROTI PTION Trp Ile Asp Ser Gly 70 | EIN N: SI Asn Arg Asn Arg Arg Arg | His Gly Lys 40 Arg Lys | Glu Asn 25 Tyr Phe Leu | Thr 10 Leu Glu Ile | Ile Ser Glu Phe 75 | Ala Thr Asn 60 Thr | Tyr Val 45 Ala Cys | Thr 30 Val Ser | 15 Leu Val Met Asn | Thr Glu Pro Glu 80 | |
| 167 168 169 170 171 172 173 174 175 176 | | (xi) Met Leu Lys Asp Arg 65, | SEQUENTHY Gly Ala Leu 50 Ile | JENCI Gly Asp Asn 35 Glu Ser | E TYIE DESTILE Pro 20 Met Thr | PE: I SCRII Glu 5 Arg Lys Gly | PROTI PTION Trp Ile Asp Ser Gly 70 | EIN N: SI Asn Arg Asn Arg Arg Arg | His Gly Lys 40 Arg Lys | Glu Asn 25 Tyr Phe Leu | Thr 10 Leu Glu Ile Ala | Ile Ser Glu Phe 75 | Ala Thr Asn 60 Thr | Tyr Val 45 Ala Cys | Thr 30 Val Ser | 15 Leu Val Met Asn | Thr Glu Pro Glu 80 | |
| 167 168 169 170 171 172 173 174 175 176 177 | | (xi) Met Leu Lys Asp Arg 65, Glu | SEQUENTHY Gly Ala Leu 50 Ile Lys | JENCI Gly Asp Asn 35 Glu Ser Lys | E TYIE DESTILE Pro 20 Met Thr Pro Glu | PE: 1 Glu 5 Arg Lys Gly Asp | PROTICE Trp Ile Asp Ser Gly 70 Glu | EIN N: SI Asn Arg Asn Arg 55 Arg Ile | His Gly Lys 40 Arg Lys | Glu Asn 25 Tyr Phe Leu Val | Thr 10 Leu Glu Ile Ala Ala | Ile Ser Glu Phe 75 Asp | Ala Thr Asn 60 Thr | Tyr Val 45 Ala Cys Gln | Thr 30 Val Ser Phe Thr | 15 Leu Val Met Asn Leu 95 | Thr Glu Pro Glu 80 Ser | |
| 167 168 169 170 171 172 173 174 175 176 177 178 | | (xi) Met Leu Lys Asp Arg 65, Glu | SEQUENTHY Gly Ala Leu 50 Ile Lys | JENCI Gly Asp Asn 35 Glu Ser Lys | E TYIE DESTILE Pro 20 Met Thr Pro Glu | PE: 1 Glu 5 Arg Lys Gly Asp Thr 85 Leu | PROTICE Trp Ile Asp Ser Gly 70 Glu | EIN N: SI Asn Arg Asn Arg 55 Arg Ile | His Gly Lys 40 Arg Lys Trp Lys | Asn 25 Tyr Phe Leu Val | Thr 10 Leu Glu Ile Ala Ala 90 | Ile Ser Glu Phe 75 Asp | Ala Thr Asn 60 Thr | Tyr Val 45 Ala Cys Gln Met | Thr 30 Val Ser Phe Thr | 15 Leu Val Met Asn Leu 95 Trp | Thr Glu Pro Glu 80 Ser | |
| 167 168 169 170 171 172 173 174 175 176 177 178 179 180 | | (xi) Met Leu Lys Asp Arg 65, Glu | SEQUENT Thr Gly Ala Leu 50 Ile Lys Lys | JENCI Gly Asp Asn 35 Glu Ser Lys | E TYIE DESTILE Pro 20 Met Thr Pro Glu Val | PE: 1 Glu 5 Arg Lys Gly Asp Thr 85 Leu | PROTICE Trp Ile Asp Ser Gly 70 Glu Ser | EIN N: SI Asn Arg Asn Arg 55 Arg Ile Thr | His Gly Lys 40 Arg Lys Trp Lys | Asn 25 Tyr Phe Leu Val Asn 105 | Thr 10 Leu Glu Ile Ala 90 Val | Ile Ser Glu Phe 75 Asp | Ala Thr Asn 60 Thr Ile Ser | Tyr Val 45 Ala Cys Gln Met | Thr 30 Val Ser Phe Thr Gln 110 | 15 Leu Val Met Asn Leu 95 Trp | Thr Glu Pro Glu 80 Ser Asn | |
| 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 | | (xi) Met Leu Lys Asp Arg 65, Glu | SEQUENT Thr Gly Ala Leu 50 Ile Lys Lys | JENCI Gly Asp Asn 35 Glu Ser Lys | E TYIE DESTILE Pro 20 Met Thr Pro Glu Val | PE: 1 Glu 5 Arg Lys Gly Asp Thr 85 Leu | PROTICE Trp Ile Asp Ser Gly 70 Glu Ser | EIN N: SI Asn Arg Asn Arg 55 Arg Ile Thr | His Gly Lys 40 Arg Lys Trp Lys | Asn 25 Tyr Phe Leu Val Asn 105 | Thr 10 Leu Glu Ile Ala Ala 90 Val | Ile Ser Glu Phe 75 Asp | Ala Thr Asn 60 Thr Ile Ser | Tyr Val 45 Ala Cys Gln Met | Thr 30 Val Ser Phe Thr Gln 110 | 15 Leu Val Met Asn Leu 95 Trp | Thr Glu Pro Glu 80 Ser Asn | |
| 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 | | (xi) Met Leu Lys Asp 65, Glu Ala Asp | SEQUENT Thr Gly Ala Leu 50 Ile Lys Lys Asp | JENCI Gly Asp Asn 35 Glu Ser Lys Lys Ser 115 | E TYIE DESTILE Pro 20 Met Thr Pro Glu Val 100 Arg | PE: 1 GCRII Glu 5 Arg Lys Gly Asp Thr 85 Leu | PROTICE Trp Ile Asp Ser Gly 70 Glu Ser Leu | EIN N: SI Asn Arg Asn Arg 55 Arg Ile Thr Leu | His Gly Lys 40 Arg Lys Trp Lys Val 120 | Asn 25 Tyr Phe Leu Val Asn 105 Val | Thr 10 Leu Glu Ile Ala Ala 90 Val Gly | Ile Ser Glu Phe 75 Asp Arg | Ala Thr Asn 60 Thr Ile Ser Lys | Tyr Val 45 Ala Cys Gln Met Arg 125 | Thr 30 Val Ser Phe Thr Gln 110 Arg | 15 Leu Val Met Asn Leu 95 Trp Asp | Thr Glu Pro Glu 80 Ser Asn | |
| 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 | | (xi) Met Leu Lys Asp 65, Glu Ala Asp | SEQUENT Thr Gly Ala Leu 50 Ile Lys Lys Asp | JENCI Gly Asp Asn 35 Glu Ser Lys Lys Ser 115 | E TYIE DESTILE Pro 20 Met Thr Pro Glu Val 100 Arg | PE: 1 GCRII Glu 5 Arg Lys Gly Asp Thr 85 Leu | PROTICE Trp Ile Asp Ser Gly 70 Glu Ser Leu | EIN N: SI Asn Arg Asn Arg 55 Arg Ile Thr Leu | His Gly Lys 40 Arg Lys Trp Lys Val 120 | Asn 25 Tyr Phe Leu Val Asn 105 Val | Thr 10 Leu Glu Ile Ala Ala 90 Val | Ile Ser Glu Phe 75 Asp Arg | Ala Thr Asn 60 Thr Ile Ser Lys | Tyr Val 45 Ala Cys Gln Met Arg 125 | Thr 30 Val Ser Phe Thr Gln 110 Arg | 15 Leu Val Met Asn Leu 95 Trp Asp | Thr Glu Pro Glu 80 Ser Asn | |
| 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 | | (xi) Met Leu Lys Asp 65, Glu Ala Asp Glu | SEQUENT Thr Gly Ala Leu 50 Ile Lys Lys Asp Asp 130 | JENCI Gly Asp Asn 35 Glu Ser Lys Lys Ser 115 Phe | E TYIE DESTILE Pro 20 Met Thr Pro Glu Val 100 Arg | PE: 1 GCRII Glu 5 Arg Lys Gly Asp Thr 85 Leu Arg | PROTIPETION Trp Ile Asp Ser Gly 70 Glu Ser Leu Asp | N: SI Asn Arg Asn Arg 55 Arg Ile Thr Leu Asp 135 | His Gly Lys 40 Arg Lys Trp Lys Val 120 Asp | Asn 25 Tyr Phe Leu Val Asn 105 Val | Thr 10 Leu Glu Ile Ala Ala 90 Val Gly | Ile Ser Glu Phe 75 Asp Arg Phe Val | Ala Thr Asn 60 Thr Ile Ser Lys Trp 140 | Tyr Val 45 Ala Cys Gln Met Arg 125 Phe | Thr 30 Val Ser Phe Thr Gln 110 Arg | 15 Leu Val Met Asn Leu 95 Trp Asp | Thr Glu Pro Glu 80 Ser Asn Asp | |
| 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 | | (xi) Met Leu Lys Asp 65, Glu Ala Asp Glu | SEQUENT Thr Gly Ala Leu 50 Ile Lys Lys Asp Asp 130 | JENCI Gly Asp Asn 35 Glu Ser Lys Lys Ser 115 Phe | E TYIE DESTILE Pro 20 Met Thr Pro Glu Val 100 Arg | PE: 1 GCRII Glu 5 Arg Lys Gly Asp Thr 85 Leu Arg | PROTIPETION Trp Ile Asp Ser Gly 70 Glu Ser Leu Asp | N: SI Asn Arg Asn Arg 55 Arg Ile Thr Leu Asp 135 | His Gly Lys 40 Arg Lys Trp Lys Val 120 Asp | Asn 25 Tyr Phe Leu Val Asn 105 Val | Thr 10 Leu Glu Ile Ala 90 Val Gly Pro | Ile Ser Glu Phe 75 Asp Arg Phe Val | Ala Thr Asn 60 Thr Ile Ser Lys Trp 140 | Tyr Val 45 Ala Cys Gln Met Arg 125 Phe | Thr 30 Val Ser Phe Thr Gln 110 Arg | 15 Leu Val Met Asn Leu 95 Trp Asp | Thr Glu Pro Glu 80 Ser Asn Asp | |
| 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 | | Leu Lys Asp Arg 65, Glu Ala Asp Glu Gly 145 | SEQUENT Thr Gly Ala Leu 50 Ile Lys Lys Asp Asp 130 Phe | JENCI Gly Asp Asn 35 Glu Ser Lys Lys Ser 115 Phe | E TYNE DESTRICT THE Pro 20 Met Thr Pro Glu Val 100 Arg Val Asp | PE: 1 GCRII Glu 5 Arg Lys Gly Asp Thr 85 Leu Arg | PROTICE Trp Ile Asp Ser Gly 70 Glu Ser Leu Asp Glu 150 | EIN N: SI Asn Arg Asn Arg 55 Arg Ile Thr Leu Asp 135 Lys | His Gly Lys 40 Arg Lys Trp Lys Val 120 Asp | Asn 25 Tyr Phe Leu Val Asn 105 Val Val Thr | Thr 10 Leu Glu Ile Ala 90 Val Gly Pro | Ile Ser Glu Phe 75 Asp Arg Phe Val Trp 155 | Ala Thr Asn 60 Thr Ile Ser Lys Trp 140 Val | Tyr Val 45 Ala Cys Gln Met Arg 125 Phe Leu | Thr 30 Val Ser Phe Thr Gln 110 Arg Asp | 15 Leu Val Met Asn Leu 95 Trp Asp Asn Thr | Thr Glu Pro Glu 80 Ser Asn Asp Met Glu 160 | |
| 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 | | Leu Lys Asp Arg 65, Glu Ala Asp Glu Gly 145 | SEQUENT Thr Gly Ala Leu 50 Ile Lys Lys Asp Asp 130 Phe | JENCI Gly Asp Asn 35 Glu Ser Lys Lys Ser 115 Phe | E TYNE DESTRICT THE Pro 20 Met Thr Pro Glu Val 100 Arg Val Asp | PE: 1 GCRII Glu 5 Arg Lys Gly Asp Thr 85 Leu Arg | PROTICE Trp Ile Asp Ser Gly 70 Glu Ser Leu Asp Glu 150 | EIN N: SI Asn Arg Asn Arg 55 Arg Ile Thr Leu Asp 135 Lys | His Gly Lys 40 Arg Lys Trp Lys Val 120 Asp | Asn 25 Tyr Phe Leu Val Asn 105 Val Val Thr | Thr 10 Leu Glu Ile Ala 90 Val Gly Pro | Ile Ser Glu Phe 75 Asp Arg Phe Val Trp 155 | Ala Thr Asn 60 Thr Ile Ser Lys Trp 140 Val | Tyr Val 45 Ala Cys Gln Met Arg 125 Phe Leu | Thr 30 Val Ser Phe Thr Gln 110 Arg Asp | 15 Leu Val Met Asn Leu 95 Trp Asp Asn Thr | Thr Glu Pro Glu 80 Ser Asn Asp Met Glu 160 | |

Input Set : N:\Crf3\RULE60\09966803.raw
Output Set: N:\CRF3\03122002\1966803.raw

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| 193 |
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| 199 |
| The Tyr Glu Gly Pro Leu Asp Val Trp Glu Ala Lys Leu Thr Glu Glu Gly Pro Leu Asp Val Trp Glu Ala Lys Leu Thr Glu Glu Glu Gly Lys Val Tyr Phe Leu Thr Pro Asp Ala Gly Arg Val Asn Leu Trp Leu Glu Glu Gly Lys Ala Gly Lys Ala Gly Lys Ala Gly Val Thr Gly Asp His Trp Ile True Glu Gly Leu Asp Val Ser Asp Gly Lys Ala Leu Tyr Asp Gly Leu Asp Val Gly Lys Ala Leu Tyr Leu Tyr Asp Gly Gly Glu Leu Lys Gln Val Gly Gly Gly Gly Gly Gly Gly Gly Gly Gl |
| 201 Lys Val Tyr Phe Leu Thr Pro Asp Ala Gly Arg Val Asn Leu Trp Leu Color Colo |
| Lys Val Tyr Phe Leu Thr Pro Asp Ala Gly Arg Val Asn Leu Trp Leg 203 275 280 280 285 285 285 290 290 295 295 300 300 206 305 310 315 |
| 203 275 280 285 285 285 1 |
| 204 Trp Asp Gly Lys Ala Glu Arg Val Val Thr Gly Asp His Trp Ile Type 205 290 295 300 300 300 300 206 Gly Leu Asp Val Ser Asp Gly Lys Ala Leu Leu Leu Leu Leu Ile Met Thr App Ile Gly Glu Leu Tyr Leu Tyr Asp Gly Glu Leu Lys Gln Val Ser Asp Gly Glu Leu Lys Gln Val Ser Asp Gly Glu Leu Lys Gln Val Ser Asp Gly Glu Leu Lys Glu Find Glu Tyr Asn Gly Pro Ile Phe Arg Lys Leu Lys Thr Phe Glu Pro Ile Phe Arg Asp Leu Glu Ile Asp Gly Trp Tyr Asp Gly Glu Leu Lys Glu Glu Leu Lys Glu Glu Find Glu Fin |
| 205 290 |
| 206 |
| 207 305 310 315 32 208 Thr Arg Ile Gly Glu Leu Tyr Leu Tyr Asp Gly Glu Leu Lys Gln Val 325 330 330 335 210 Thr Glu Tyr Asn Gly Pro Ile Phe Arg Lys Leu Lys Leu Lys Thr Phe Glu Pro Sul 340 345 345 350 350 212 Arg His Phe Arg Phe Arg Phe Lys Ser Lys Asp Leu Glu Ile Asp Gly Trp Tyr 360 365 365 365 214 Leu Arg Pro Glu Val Lys Glu Glu Glu Lys Ala Pro Val Ile Val Phe Val 370 375 380 380 380 360 216 His Gly Gly Pro Lys Gly Met Tyr Gly His Arg Phe Val Tyr Glu Met San |
| 208 Thr Arg Ile Gly Glu Leu Tyr Leu Tyr Asp Gly Glu Leu Lys Gln Vac 325 210 Thr Glu Tyr Asn Gly Pro Ile Phe Arg Lys Leu Lys Thr Phe Glu Pro 340 211 |
| 209 |
| 210 Thr Glu Tyr Asn Gly Pro Ile Phe Arg Lys Leu Lys Thr Phe Glu Pro 340 340 345 350 350 350 350 350 350 350 350 350 350 350 360 365 |
| 211 |
| 212 Arg His Phe Arg Phe Lys Ser Lys Asp Leu Glu Ile Asp Gly Trp Tr 213 355 360 365 214 Leu Arg Pro Glu Val Lys Glu Glu Lys Ala Pro Val Ile Val Phe Val 215 370 375 380 216 His Gly Gly Pro Lys Gly Met Tyr Gly His Arg Phe Val Tyr Glu Ma 217 385 390 395 40 218 Gln Leu Met Ala Ser Lys Gly Tyr Tyr Val Val Phe Val Asn Pro An 219 405 410 415 220 Gly Ser Asp Gly Tyr Ser Glu Asp Phe Ala Leu Arg Val Leu Glu An 221 420 425 430 |
| 213 |
| 214 Leu Arg Pro Glu Val Lys Glu Glu Lys Ala Pro Val Ile Val Phe Val 215 370 375 380 216 His Gly Gly Pro Lys Gly Met Tyr Gly His Arg Phe Val Tyr Glu Met 385 390 395 40 217 385 390 395 40 40 218 Gln Leu Met Ala Ser Lys Gly Tyr Tyr Val Val Phe Val Asn Pro At 405 410 415 220 Gly Ser Asp Gly Tyr Ser Glu Asp Phe Ala Leu Arg Val Leu Glu At 430 430 |
| 215 |
| 216 His Gly Gly Pro Lys Gly Met Tyr Gly His Arg Phe Val Tyr Glu Met 217 385 390 395 40 218 Gln Leu Met Ala Ser Lys Gly Tyr Tyr Val Val Phe Val Asn Pro At 219 405 410 415 220 Gly Ser Asp Gly Tyr Ser Glu Asp Phe Ala Leu Arg Val Leu Glu At 221 420 425 430 |
| 217 385 390 395 40 218 Gln Leu Met Ala Ser Lys Gly Tyr Tyr Val Val Phe Val Asn Pro Andrew And |
| 218 Gln Leu Met Ala Ser Lys Gly Tyr Tyr Val Val Phe Val Asn Pro As 405 410 415 220 Gly Ser Asp Gly Tyr Ser Glu Asp Phe Ala Leu Arg Val Leu Glu As 420 425 430 |
| 219 405 410 415 220 Gly Ser Asp Gly Tyr Ser Glu Asp Phe Ala Leu Arg Val Leu Glu As 221 420 425 430 |
| 220 Gly Ser Asp Gly Tyr Ser Glu Asp Phe Ala Leu Arg Val Leu Glu A: 221 420 425 430 |
| 221 420 425 430 |
| |
| 222 The Cly Iou Clu Aca Pho Clu Aca Ilo Mot Aca Cly Ilo Clu Clu Di |
| 222 III GIY bed GIG ASP FRE GIG ASP IIE MEC ASH GIY IIE GIG GIG FR |
| 223 435 440 445 |
| Phe Lys Leu Glu Pro Gln Ala Asp Arg Glu Arg Val Gly Ile Thr G |
| 225 450 455 460 |
| 226 Ile Ser Tyr Gly Gly Phe Met Thr Asn Trp Ala Leu Thr Gln Ser As |
| 227 465 470 475 47 |
| Leu Phe Lys Ala Gly Ile Ser Glu Asn Gly Ile Ser Tyr Trp Leu T |
| 229 485 490 495 |
| 230 Ser Tyr Ala Phe Ser Asp Ile Gly Leu Trp Tyr Asp Val Glu Val I |
| 231 500 505 510 |
| 232 Gly Pro Asn Pro Leu Glu Asn Glu Asn Phe Arg Lys Leu Ser Pro Le |
| 233 515 520 525 |
| 234 Phe Tyr Ala Gln Asn Val Lys Ala Pro Ile Leu Leu Ile His Ser Le |
| 235 530 535 540 |
| 236 Glu Asp Tyr Arg Cys Pro Leu Asp Gln Ser Leu Met Phe Tyr Asn Va |
| 237 545 550 555 56 |
| |
| 238 Leu Lys Asp Met Gly Lys Glu Ala Tyr Ile Ala Ile Phe Lys Arg G |

VERIFICATION SUMMARY

DATE: 03/12/2002

PATENT APPLICATION: US/09/966,803

TIME: 09:44:21

Input Set : N:\Crf3\RULE60\09966803.raw Output Set: N:\CRF3\03122002\I966803.raw

L:19 M:220 C: Keyword misspelled or invalid format, [(A) APPLICATION NUMBER:]

L:20 M:220 C: Keyword misspelled or invalid format, [(B) FILING DATE:]

L:40 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=1

L:43 M:334 W: (2) Invalid Amino Acid in Coding Region, NUMBER OF INVALID KEYS:1

L:253 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=3 L:263 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=4